



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/583,779

06/21/2006

Hiroshi Toyoda

062680

6052

38834

7590

09/22/2009

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

D'ANIELLO, NICHOLAS P

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

09/22/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5, 6, 8, 11, 13, 14 and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshinori et al. (JP 2002-282703 cited in IDS, a machine translation of which is included).

Regarding **independent claims 1-3**, Yoshinori et al. teach a photocatalyst sheet (see figure 1) comprising; a substrate (support layer 2) made of polyester (a synthetic and inorganic fiber) or nylon (an inorganic fiber) (paragraph [0021] of translation), a coated layer made of a polyvinyl chloride resin coated on both sides of said substrate (see paragraphs [0006-0007]), and a photocatalyst-containing layer (figure 1, photocatalyst grain 1) coated on at least one side of said coated layer, characterized in that; said photocatalyst-containing layer contains; polyvinyl chloride resin and acrylic resin (paragraphs [0006-0007]) and PTFE resin (a fluorocarbon resin), and apatite-coated photocatalyst particles (see paragraph [0013]), the ratio of said apatite-coated photocatalyst particles to said photocatalyst-containing layer is 10-40 weight % (paragraph [0011]).

The Examiner notes that claimed limitation of “photocatalyst sheets are mutually thermally welded” is drawn to a product by process limitation, however per MPEP 2113: The patentability of a product does not depend on its method of production. In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In the instant case, the product set forth in product-by-process claims 1-3 (as claimed) are the same as that set forth by Yoshinori et al., above.

In regard to **the amendment** to independent claims 1-3, Yoshinori et al. teach the particles are preferably 10-30nm (paragraph [0013]). As the apatite coated photocatalyst particles disclosed by the reference are indistinguishable from those of the instant claim the particles of Yoshinori et al. are reasonably expected to have low water solubility (especially because “low” is not explicitly defined).

The limitation “the coating quantity of said apatite coated on said photocatalyst particles is such that the weight loss ratio of the whole of said photocatalyst sheet is 10% or less in the case that ultraviolet light of intensity of 18 mW/cm² is irradiated for one hour on the surface of said photocatalyst sheet,” is conditional (in the case that...irradiated) and does not positively limit the photocatalyst sheet. In any event, the coating quantity of Yoshinori et al. is expected to have the same properties as the coating is deposited in the same quantity as the instant claim (10-40wt%).

Additionally, as the photocatalyst sheet of the prior art is structurally indistinguishable from the claimed sheet it is reasonably expected to have a water contact angle of said photocatalyst sheet surface is 130 degrees or less.

The amended peeling rate limitation is still not positively required as the sheets are not positively required to be thermally welded.

In regard to **claim 5**, the apatite-coated photocatalyst particles fixed in said photocatalyst containing layer have parts exposed from the surface of said photocatalyst containing layer (figure 1, paragraph [0013]).

In regard to **claim 6**, the apatite-coated photocatalyst particles are the photocatalyst particles either a part of the surface of which is coated with apatite, or a whole surface of which is coated with porous apatite (paragraph [0013]).

In regard to **claim 8**, the photocatalyst sheet is either or both of an ultraviolet light responsive type and a visible light responsive type (such as TiO_2 alone or in combination with others paragraph [0012]).

In regard to **claim 11**, the apatite-coated photocatalyst particles are fixed with the resin or rubber constituting said photocatalyst-containing layer (figure 1, paragraph [0013]).

In regard to **claim 13**, the resin is either of vinyl chloride, polyethylene, polypropylene, fluorocarbon, and polystyrene resins (as applied above, paragraph [0007]).

In regard to **claim 14**, the fluorocarbon resin is polytetrafluoroethylene (PTFE) (as applied above, paragraph [0013]).

In regard to **independent claims 24-26**, these claims are identical in scope to claims 1-3, respectively, only differing in the preamble requiring two or more photocatalyst sheets that are mutually welded to each other. However, Yoshinori et al.

Art Unit: 1793

teach that the sheets may be thermally welded together (paragraph [0022]). As this mutual welding results in a thermally welded photocatalyst sheet that is indistinguishable from that of the claim; the peeling rate of two sheets mutually welded together in the photocatalyst sheet of Yoshinori et al. is reasonably expected **to be capable** of being peeled at a rate of 50mm/min absent evidence to the contrary.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinori et al. as applied to claims 1-3 above, and further in view of Taoda et al. (USP 6,180,548).

Yoshinori et al. disclose apatite coated titania (paragraph [0013]) but fail to disclose a specific apatite. However, Taoda et al. teach a similar titanium oxide coated photocatalyst where the surface of the titania is coated with apatite hydroxide because this form of apatite absorbs bacteria in water or air which can be decomposed by the photocatalyst (column 3 line 66 - column 4 line 23).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use apatite hydroxide as the apatite coating in the photocatalyst sheet of

Art Unit: 1793

Yoshinori et al. as this is a known effective form of apatite for photocatalyst coatings as exemplified by Taoda et al.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive. Specifically, applicant attempts to distinguish the claimed photocatalyst sheet from that of the prior art by defining material properties (peeling rate, weight loss ratio, water contact angle) that are inherent properties of the photocatalyst sheet. Although Yoshinori et al. do not explicitly disclose these specific properties they are reasonably assumed to be inherently present because the photocatalyst sheet of is structurally (same size and coating) and materially (same exact chemical compositions) indistinguishable from that of the instant claims.

Additionally, Yoshinori et al. teaches that the sheets may be thermally welded (paragraph [0022]) and is therefore expected to be capable of being peeled at the claimed rate absent evidence to the contrary.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

Art Unit: 1793

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas P. D'Aniello whose telephone number is (571)270-3635. The examiner can normally be reached on Monday through Thursday from 8am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1793

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. P. D./
Examiner, Art Unit 1793

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793